

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-7. (Canceled)

8. (Previously presented) A liquid crystal display device comprising:
a thin film transistor array substrate including thin film transistors supported by an insulating substrate and each of which has a gate electrode, a source electrode and a drain electrode; pixel electrodes comprised of transparent conductive films connected to respective thin film transistors; supplementary capacitances for retaining electric charges of the pixel electrodes; and a liquid crystal layer between at least the thin film transistor array substrate and an opposite substrate,
the supplementary capacitance for a pixel region comprising a pixel electrode, a supplementary capacitance use transparent insulating film formed under at least the pixel electrode and a common electrode that is formed under the supplementary capacitance use transparent insulating film and comprised of a transparent conductive film connected to a potential, and
wherein, for the supplementary capacitance in the pixel region, the supplementary capacitance use transparent insulating film has a film thickness d so as to satisfy the following equation:

$$d = \lambda / (2 \times n) \times m$$

where m is an integer, and n is an index of refraction of the transparent insulating film of the supplementary capacitance, and λ is a wavelength at which transmittance is desired to be increased, so that materials and thicknesses thereof of the supplementary capacitance are selected so as to increase transmittance at the wavelength λ .

9. (Previously presented) A liquid crystal display device as claimed in claim 8, wherein a difference between a refractive index of the supplementary capacitance use transparent insulating film and a refractive index of the pixel electrodes is set to a value of not greater than 0.6 and a difference between a refractive index of the supplementary capacitance use transparent insulating film and a refractive index of the common electrode is set to a value of not greater than 0.6.

10. (Previously presented) A liquid crystal display device as claimed in claim 8, wherein the pixel electrode and the common electrode are made of a material having a specific resistance of 1 m Ω ·cm or less.

11. (Previously presented) A liquid crystal display device as claimed in claim 8, wherein the pixel electrodes have edge portions overlapping gate bus lines and source bus lines formed on the insulating substrate, and the common electrode is arranged between

the gate bus lines and the pixel electrodes and between the source bus lines and the pixel electrodes so as to cover the gate bus lines and the source bus lines.

12. (Previously presented) A liquid crystal display device as claimed in claim 8, wherein the supplementary capacitance use transparent insulating film is any one of a silicon oxide film, a silicon nitride film and an organic resin film or a laminate film comprised of at least two of the silicon oxide film, the silicon nitride film and the organic resin film.

13. (Previously presented) A liquid crystal display device as claimed in claim 8, wherein the pixel uses a thin film transistor having an active layer comprising polysilicon, and a drive circuit thereof uses thin film transistors whose active layers comprising polysilicon are formed on the insulating substrate identical to the substrate on which the thin film transistor of the pixel is formed.

14. (Previously presented) A liquid crystal display device as claimed in claim 13, wherein the active layer of the thin film transistor of the pixel and the transistors of the drive circuit are polysilicon films crystallized by utilizing a catalytic effect of an introduced catalytic element.

KATSUYA
Appl. No. 09/617,120
December 16, 2003

15. (Previously presented) A liquid crystal display comprising:

a pixel electrode in communication with a switching element and supported by a substrate;

a supplemental capacitance for retaining electric charge of the pixel electrode, the supplemental capacitance being comprised of the pixel electrode, another electrode, and a dielectric film provided between the pixel electrode and the another electrode;

wherein a thickness d and index of refraction n of the dielectric film of the supplemental capacitance are selected to satisfy an equation $d = \lambda / (2 \times n) \times m$, wherein m is an integer, in order to increase transmittance at a wavelength λ .

16. (Previously presented) The liquid crystal display of claim 15, wherein the dielectric film of the supplemental capacitance has an index of refraction of at least 1.4, and a difference between respective indices of refraction of the dielectric film and the another electrode is no greater than 0.6.

17. (Previously presented) The liquid crystal display of claim 15, wherein the index of refraction of the dielectric film is about 1.9.

18. (Previously presented) The liquid crystal display of claim 15, wherein the dielectric film comprises silicon nitride.

19-24. (Canceled)

25. (Previously presented) The display of claim 8, wherein the pixel electrode has edge portions overlapping at least one gate bus line and at least one source bus line formed on the substrate, and the another electrode is arranged between the gate bus line and the pixel electrode and between the source bus line and the pixel electrode so as to cover the gate bus line and the source bus line so that the gate bus line and source bus line act as a black matrix.

26. (New) The display of claim 15, wherein the switching element comprises a thin film transistor (TFT) including a gate, a source and a drain, and wherein a gate line is in communication with the gate, and wherein the pixel electrode at least partially overlaps the gate line.

27. (New) The display of claim 26, wherein said another electrode is formed between at least portions of the pixel electrode and the gate line.

28. (New) The display of claim 15, wherein said switching element comprises a transistor including a gate, source and drain, and wherein said another electrode at least partially overlaps at least one of a gate line and a source line of the display, and wherein the gate line and the source line are opaque.

29. (New) The display of claim 15, wherein said another electrode is electrically connected to some other electrode so as to be at a potential.

30. (New) The display of claim 15, wherein said another electrode is transparent.

31. (New) The display of claim 15, wherein said wavelength λ is from 540 to 550 nm.

32. (New) The display of claim 15, wherein said pixel electrode comprises ITO.

33. (New) A liquid crystal display comprising:
at least one transistor supported by a substrate;
a pixel electrode comprising a transparent conductive film electrically connected to the transistor through a contact hole defined in at least an insulating film;
an additional electrode located at least partially between the pixel electrode and at least one of a gate line and a source line, wherein said insulating film is provided at least partially between the pixel electrode and the additional electrode, and wherein the additional electrode makes up part of an auxiliary capacitor; and
wherein said insulating film is of a thickness d so as to satisfy the following equation:

KATSUYA
Appl. No. 09/617,120
December 16, 2003

$$d = \lambda / (2 \times n) \times m$$

where m is an integer, n is an index of refraction of the insulating film, and λ is a wavelength at which transmittance is to be increased.

34. (New) The display of claim 33, wherein said insulating film comprises silicon nitride.

35. (New) The display of claim 33, wherein said insulating film has an index of refraction "n" of not smaller than 1.4.

36. (New) The display of claim 33, wherein said pixel electrode comprises ITO.

37. (New) The display of claim 33, wherein said additional electrode is transparent.

38. (New) The display of claim 33, wherein said wavelength λ is from 540 to 550 nm.

39. (New) The display of claim 33, wherein said additional electrode at least partially overlaps the gate line of the display, and wherein the gate line is opaque.

40. (New) The display of claim 39, wherein at least one insulating film is provided between the additional electrode and the gate line that is at least partially overlapped by the additional electrode.

41. (New) The display of claim 40, wherein the auxiliary capacitor comprises at least parts of each of said additional electrode, said gate line over which the additional electrode is at least partially located, and the insulating film provided between the additional electrode and the gate line.

42. (New) A liquid crystal display comprising:
at least one transistor supported by a substrate;
a pixel electrode comprising a transparent conductive film electrically connected to the transistor;
an electrode located at least partially between the pixel electrode and a gate line, so that the electrode at least partially overlaps the gate line, and wherein the electrode makes up part of an auxiliary capacitor; and
an insulating film located immediately adjacent the electrode and having a thickness d so as to satisfy the following equation:

$$d = \lambda / (2 \times n) \times m$$

KATSUYA
Appl. No. 09/617,120
December 16, 2003

where m is an integer, n is an index of refraction of the insulating film, and λ is a wavelength at which transmittance is to be increased, and wherein the index of refraction n of the insulating film is not smaller than 1.4.

43. (New) The display of claim 42, wherein said insulating film comprises silicon nitride.

44. (New) The display of claim 42, wherein said pixel electrode comprises ITO.

45. (New) The display of claim 42, wherein said wavelength λ is from 540 to 550 nm.

46. (New) The display of claim 42, wherein the gate line is opaque.

47. (New) The display of claim 42, wherein the auxiliary capacitor comprises at least parts of each of said additional electrode, said gate line over which the additional electrode is at least partially located, and a dielectric therebetween.

48. (New) The display of claim 42, wherein the insulating film is located over the additional electrode.

49. (New) A liquid crystal display comprising:

at least one transistor supported by a substrate;

a pixel electrode comprising a transparent conductive film electrically connected to the transistor;

a conductive layer located at least partially between the pixel electrode and a gate line, so that the conductive layer at least partially overlaps the gate line, and wherein the conductive layer makes up part of an auxiliary capacitor; and

an insulating film located immediately adjacent the conductive layer and having a thickness d so as to satisfy the following equation:

$$d = \lambda / (2 \times n) \times m$$

where m is an integer, n is an index of refraction of the insulating film, and λ is a wavelength at which transmittance is to be increased, and wherein the index of refraction n of the insulating film is not smaller than 1.4.

50. (New) The display of claim 49, wherein said insulating film comprises silicon nitride.

51. (New) The display of claim 49, wherein said pixel electrode comprises ITO.

52. (New) The display of claim 49, wherein said wavelength λ is from 540 to 550 nm.